

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Original) An automatic pricing method for setting prices of items that are marketed in a web marketing system that performs electronic commerce on a network, comprising steps of:

at each point in time, carrying out marketing for fixed time intervals using a price that is one step size higher than, and a price that is one said step size lower than, an optimal price estimate at that time;

comparing profits obtained as a result of said marketing;

updating the optimal price estimate at time in question in a direction of price at which greater profit was obtained; and

repeating said marketing step, said comparison step, and said updating step.

2. (Currently Amended) An automatic pricing method according to claim 1 wherein said step size is determined by raising  $[[the]]$  a number of past marketing time intervals to minus  $\alpha$  power, where  $\alpha$  is a positive number that is less than 1.

3. (Withdrawn) An automatic pricing method for setting prices of items that are marketed in a web marketing system that performs electronic commerce on a network, comprising the steps of:

(i) calculating, at each point in time, a price for each item by using both a weight vector obtained by adding a step vector that is generated randomly or pseudo-randomly to estimate of an optimal weighting vector at that time, and a weight vector obtained by subtracting said step vector from the estimate of said optimal weight vector;

(ii) conducting marketing for fixed time intervals using said calculated prices;

(iii) comparing profits obtained as a result;

(iv) updating the estimate of the optimal weight vector at the time in question for each item is updated toward price at which higher profit was obtained; and

(v) repeating the steps (i) to (iv);

wherein set price of each item is calculated as inner product of the weight vector for each item and an attribute vector of the item.

4. (Withdrawn) An automatic pricing method according to claim 3 wherein the size of said step vector is determined by raising the number of past marketing time intervals to a minus  $\alpha$  power, where  $\alpha$  is a positive number that is less than 1.

5. (Withdrawn) A display item determination method for selecting items that should be displayed from among a multiplicity of sales items in a web marketing system that performs electronic commerce on a network, comprising the steps of:

carrying out an automatic pricing method according to claim 3; and  
selecting and displaying a fixed number of items that maximize an evaluation value which is higher amount of profit of profits that were obtained at two sales prices at each point in time and for each item, said two sales prices being adopted at preceding time point.

6. (Withdrawn) A display item determination method according to claim 5 wherein:

at each point in time, the expected profit for each item among a partial aggregate that is composed of a fixed number of elements among aggregate items of all sales objects is a sum of profit amounts of the two sales prices adopted at the preceding point in time; and

a partial aggregate that approximately maximizes a weighted sum of sums of expected profits for all items of said partial aggregate and an index that indicates variation between item attribute vectors of all items of said partial aggregate is selected and items that should be displayed are determined.

7. (Withdrawn) A method of determining items to display according to claim 6 wherein a sum of Hamming distances between pairs of all item attribute vectors of a partial aggregate is used as the index that indicates variation of the item attribute vectors of items in a partial aggregate.

8. (Withdrawn) An automatic pricing device for setting prices of items that are marketed in a web marketing system that performs electronic commerce on a network, comprising:

input means for receiving item information and marketing information that includes marketing history in the web marketing system from said web marketing system;

item information storage means for storing received item information;

marketing history data storage means for storing received marketing information;

automatic price calculation means that refers to item information stored in said item information storage means and marketing information stored in said marketing history data storage means, updates prices of said items, and outputs a result as price information; and

output means for transmitting said outputted price information to said web marketing system;

wherein said automatic price calculation means repeats, at each point in time, outputting of said price information such that marketing is performed for fixed time intervals at each of a price that is one step size higher than an optimal price estimate at that time and a price that is one said step size lower than said optimal price estimate; comparison of profits that are obtained as a result of said marketing; and updating of the optimal price estimate at that time in a direction of price at which higher profit was obtained.

9. (Withdrawn) An automatic pricing device for setting prices of items that are marketed in a web marketing system that performs electronic commerce on a network, comprising:

input means for receiving item information and marketing information that includes marketing history in the web marketing system from said web marketing system;

item information storage means for storing received item information;

marketing history data storage means for storing received marketing information;

automatic price calculation means that refers to item information stored in said item information storage means and marketing information stored in said marketing history data storage means, updates prices of said items, and outputs a result as price information; and

output means for transmitting said outputted price information to said web marketing system;

wherein said automatic price calculation means repeats calculation of set price of each item as inner product of a weight vector of each item and an attribute vector of the item; calculation, at each point in time, of a price for each item by using both a weight vector obtained by adding a step vector that is generated randomly or pseudo-randomly to estimate of an optimal weight vector at that time, and a weight vector obtained by subtracting said step

vector from the estimate of said optimal weighting vector; outputting of said calculated price as said price information; comparison of profits that are obtained as a result; and updating of the estimate of the optimal weighting vector for each item at that time in a direction of price at which higher profit was obtained.

10. (Withdrawn) A device for automatic pricing and display item determination for setting prices of items that are marketed in a web marketing system that performs electronic commerce on a network and for determining items to display in said web marketing system; comprising:

input means for receiving item information and marketing information that includes marketing history in the web marketing system from said web marketing system;

item information storage means for storing received item information;

marketing history data storage means for storing received marketing information;

automatic price calculation means that refers to item information stored in said item information storage means and marketing information stored in said marketing history data storage means, updates prices of said items, and outputs a result as price information;

item display means that refers to item information stored in said item information storage means and marketing information stored in said marketing history data storage means, determines items to display in said web marketing system, and outputs a result as item display information; and

output means for transmitting said outputted price information and item display information to said web marketing system;

wherein said automatic price calculation means repeats calculation of set price of each item as inner product of a weight vector of each item and an attribute vector of the item; calculation, at each point in time, of a price for each item by using both a weight vector obtained by adding a step vector that is generated randomly or pseudo-randomly to estimate of an optimal weight vector at that time, and a weight vector obtained by subtracting said step vector from the estimate of said optimal weight vector; outputting of said calculated price as said price information; comparison of profits that are obtained as a result; and updating of the estimate of the optimal weight vector estimate for each item at that time in a direction of price at which higher profit was obtained; and

wherein said item display means, at each point in time, uses the higher of the profit amounts for two sales prices that were adopted at a previous point in time as an evaluation

value for each item to select a fixed number of items that maximize said evaluation value and outputs a as item display information.

11. (Withdrawn) A recording medium that can be read by a computer and that stores a program for causing said computer to execute an automatic pricing method for setting prices of items that are marketed in a web marketing system that performs electronic commerce on a network, said method comprising the steps of:

at each point in time, carrying out marketing for fixed time intervals using a price that is one step size higher than, and a price that is one said step size lower than, an optimal price estimate at that time;

comparing profits obtained as a result of said marketing;

updating the optimal price estimate at time in question in a direction of price at which greater profit was obtained; and

repeating said marketing step, said comparison step, and said updating step.

12. (Withdrawn) A recording medium that can be read by a computer and that stores a program for causing said computer to execute an automatic pricing method for setting prices of items that are marketed in a web marketing system that performs electronic commerce on a network, said method comprising the steps of:

(i) calculating, at each point in time, a price for each item by using both a weight vector obtained by adding a step vector that is generated randomly or pseudo-randomly to estimate of an optimal weighting vector at that time, and a weight vector obtained by subtracting said step vector from the estimate of said optimal weight vector;

(ii) conducting marketing for fixed time intervals using said calculated prices;

(iii) comparing profits obtained as a result;

(iv) updating the estimate of the optimal weight vector at the time in question for each item is updated toward price at which higher profit was obtained; and

(v) repeating the steps (i) to (iv);

wherein set price of each item is calculated as inner product of the weight vector for each item and an attribute vector of the item.

13. (Withdrawn) A recording medium that can be read by a computer and that stores a program for causing said computer to execute an automatic pricing method and an display item selecting method;

said automatic pricing method comprising the steps of:

(i) calculating, at each point in time, a price for each item by using both a weight vector obtained by adding a step vector that is generated randomly or pseudo-randomly to estimate of an optimal weighting vector at that time, and a weight vector obtained by subtracting said step vector from the estimate of said optimal weight vector;

(ii) conducting marketing for fixed time intervals using said calculated prices;

(iii) comparing profits obtained as a result;

(iv) updating the estimate of the optimal weight vector at the time in question for each item is updated toward price at which higher profit was obtained; and

(v) repeating the steps (i) to (iv);

wherein set price of each item is calculated as inner product of the weight vector for each item and an attribute vector of the item;

said display item selecting method comprising the step of:

selecting and displaying a fixed number of items that maximize an evaluation value which is higher amount of profit of profits that were obtained at two sales prices at each point in time and for each item, said two sales prices being adopted at preceding time point.

14. (New) An automatic pricing method according to claim 1, wherein a first set of web users are provided with marketing over the Internet at the price that is one step size higher than the optimal price estimate at that time, and wherein a second set of web users are provided with marketing over the Internet at the price that is one step size lower than the optimal price estimate at that time, with no web user being in both the first set of web users and the second set of web users.